

Amendments to the Claims:

Listing of Claims:

- 5 Claim 1 (currently amended): A laser power control circuit used for controlling the laser
power of an optical pick-up unit (OPU), the laser power control circuit comprising:
at least one sample/hold circuit electronically connected to the OPU for sampling
and holding a front photodiode output signal to generate an analog feedback
signal;
10 at least one analog-to-digital converter (ADC) electrically coupled to the
sample/hold circuit for transferring the analog feedback signal into a digital
feedback signal; and
at least one digital control circuit electrically coupled to the ADC for generating a
power control signal and outputting the power control signal to the OPU in order
15 to control the laser power of the OPU, the digital control circuit comprising:
an initial value transform circuit used for transforming a digital target feedback
signal into an initial power control value to initialize the power control
signal; and
a compensation circuit used for generating a compensation value according to a
20 difference between the digital feedback signal corresponding to the initial
power control value, and the digital target feedback signal so as to adjust the
power control signal;
wherein the front photodiode output signal corresponds to the laser power of the
OPU.

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Claim 2 (cancelled)

Claim 3 (currently amended): The laser power control circuit in claim [[2]] 1, wherein the digital control [[unit]] circuit further comprises:

an adder electronically connected to the initial value transform circuit and the compensation circuit for calculating the sum of the compensation value and the initial control value so as to set up the power control value.

Claim 4 (currently amended): The laser power control circuit in claim [[2]] 1, wherein the digital control [[unit]] circuit further comprises a digital filter electronically connected to the compensation circuit for filtering the digital feedback signal.

Claim 5 (currently amended): The laser power control circuit in claim [[2]] 1, wherein the digital control [[unit]] circuit further comprises a gain setting circuit for setting the gain of the compensation circuit, and the compensation circuit generates the compensation value according to the gain value and the difference.

Claim 6 (original): The laser power control circuit in claim 1, wherein the digital control circuit limits the value of the power control signal within a specific range.

Claim 7 (original): The laser power control circuit in claim 1, wherein the power control signal is a digital signal.

Claim 8 (currently amended): The laser power control circuit in claim 1, further comprising a plurality of sample/hold circuits electronically connected to the OPU and corresponding to [[the]] a plurality of predetermined output ~~power values~~ powers, respectively, wherein if the laser power control circuit is to drive the OPU to output a predetermined output power, [[the]] a sample/hold circuit corresponding to the predetermined output power is activated.

Claim 9 (currently amended): A method for controlling the laser power of an OPU, the method comprising:

generating an initial power control value to initialize a power control signal to control the OPU according to a digital target feedback signal;

5 sampling and holding a front photodiode output signal to generate an analog feedback signal;

transforming the analog feedback signal into a digital feedback signal; ~~and~~

~~generating a power control signal according to the digital feedback signal, and~~

10 ~~outputting the power control signal to the OPU so as to control the laser power of the OPU;~~

generating a compensation value to the initial power control value according to a difference between the digital feedback signal and the digital target feedback signal so as to adjust the power control; and

15 outputting the adjusted power control signal to the OPU so as to control the laser power of the OPU;

wherein the front photodiode output signal corresponds to the laser power of the OPU.

Claims 10-11 (cancelled)

20 Claim 12 (currently amended): The method of claim [[11]] 9, wherein the step of adjusting the power control value comprises calculating the sum of the compensation value and the initial power control value so as to set the power control value.

25 Claim 13 (currently amended): The method of claim [[11]] 9, wherein the step of calculating the power control value further comprises filtering the digital feedback signal.

Claim 14 (currently amended): The method of claim [[11]] 9, further comprising setting a

gain, wherein the step of calculating the power control value further comprises generating the compensation value according to the gain and the difference.

Claim 15 (original): The method of claim 14, wherein the step of setting the gain further
5 comprises:

driving the OPU using a first power control value and a second power control value;
reading a first digital feedback signal corresponding to the first power control value
and a second digital feedback signal corresponding to the second power control
value; and

10 calculating the gain according to the first power control value, the second power
control value, the first digital feedback signal, and the second digital feedback
signal.

Claim 16 (original): The method of claim 14, wherein the step of setting the gain further
15 comprises:

calculating the gain according to the first power control value, the second power
control value, the first digital feedback signal, the second digital feedback signal,
and a specific value.

20 Claim 17 (original): The method of claim 14, wherein the step of setting the gain further
comprises:

reading an optical recording medium according to a plurality of predetermined gains;
recording a plurality of the error values and jitter values corresponding to the plurality
of predetermined gains; and

25 selecting one predetermined gain among the plurality of predetermined gains as the
gain according to the plurality of error values and jitter values.

Claim 18 (original): The method of claim 14, wherein the step of setting the gain further

comprises:

using at least one power control value to continuously drive the OPU so as to make the laser power reach a specific magnitude before using the first and second power control value to drive the OPU.

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Claim 19 (original): The method of claim 18, wherein the step of continuously driving the OPU comprises using a plurality of power control values in sequence to drive the OPU, wherein a next power control value is larger than a present power control value, and the value of the digital feedback signal corresponding to the last power control
10 value is larger than a predetermined value.

Claim 20 (currently amended): The method of claim 9, wherein the step of ~~generating the power control signal~~ calculating the power control value further comprises limiting the value of the power control signal to a specific range.

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Claim 21 (original): The method of claim 9, wherein the step of sampling and holding the front photodiode output signal further comprises:
providing a plurality of sample/hold circuits, which correspond to a plurality of predetermined output powers of the OPU; and
20 controlling the OPU to output a predetermined output power and activating a sample/hold circuit corresponding to the predetermined output power.

Claim 22 (original): The method of claim 9, further comprising a step of holding the power control signal.

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Claim 23 (new): A laser power control circuit used for controlling the laser power of an optical pick-up unit (OPU), the laser power control circuit comprising:
a plurality of sample/hold circuits, electronically connected to the OPU and

corresponding to a plurality of predetermined output powers respectively, each of the plurality of sample/hold circuits utilized for sampling and holding a front photodiode output signal to generate an analog feedback signal, wherein if the laser power control circuit is to drive the OPU to output a predetermined output power, a sample/hold circuit corresponding to the predetermined output power is activated;

at least one analog-to-digital converter (ADC), electrically coupled to the plurality of sample/hold circuits, for transferring the analog feedback signal into a digital feedback signal; and

at least one digital control circuit, electrically coupled to the ADC, for generating a power control signal and outputting the power control signal to the OPU in order to control the laser power of the OPU;

wherein the front photodiode output signal corresponds to the laser power of the OPU.

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Claim 24 (new): A method for controlling the laser power of an OPU, the method comprising:

providing a plurality of sample/hold circuits, which correspond to a plurality of predetermined output powers of the OPU;

controlling the OPU to output a predetermined output power, and activating a sample/hold circuit corresponding to the predetermined output power for sampling and holding a front photodiode output signal to generate an analog feedback signal;

transforming the analog feedback signal into a digital feedback signal; and

generating a power control signal according to the digital feedback signal, and outputting the power control signal to the OPU so as to control the laser power of the OPU;

wherein the front photodiode output signal corresponds to the laser power of the OPU.